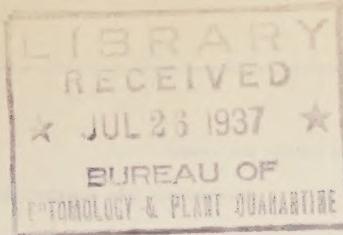


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June 1937

United States Department of Agriculture  
Bureau of Entomology and Plant Quarantine

### AN APPARATUS FOR DUSTING INDIVIDUAL PLANTS

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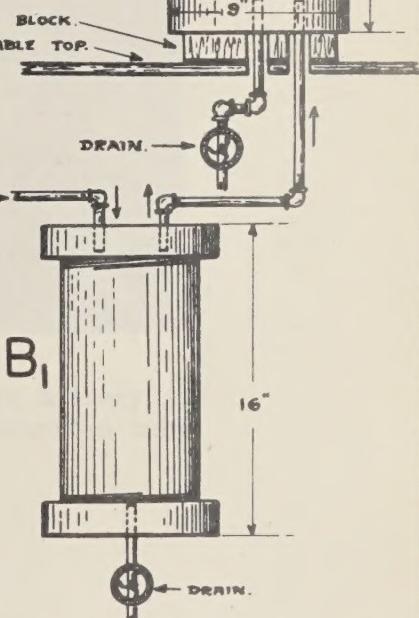
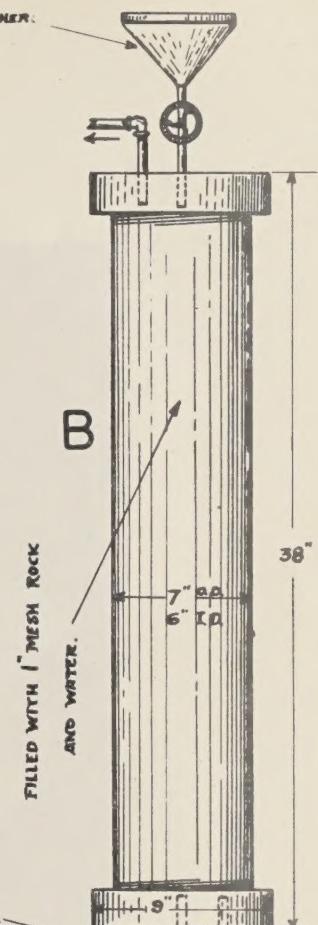
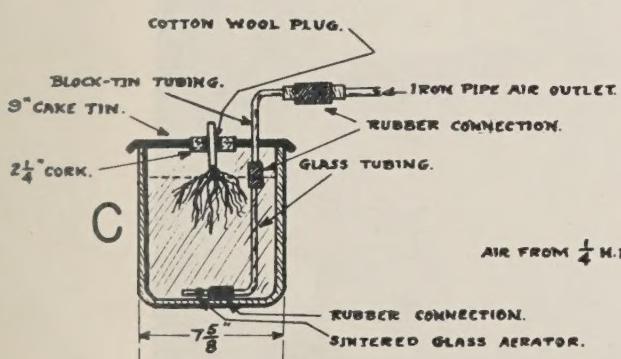
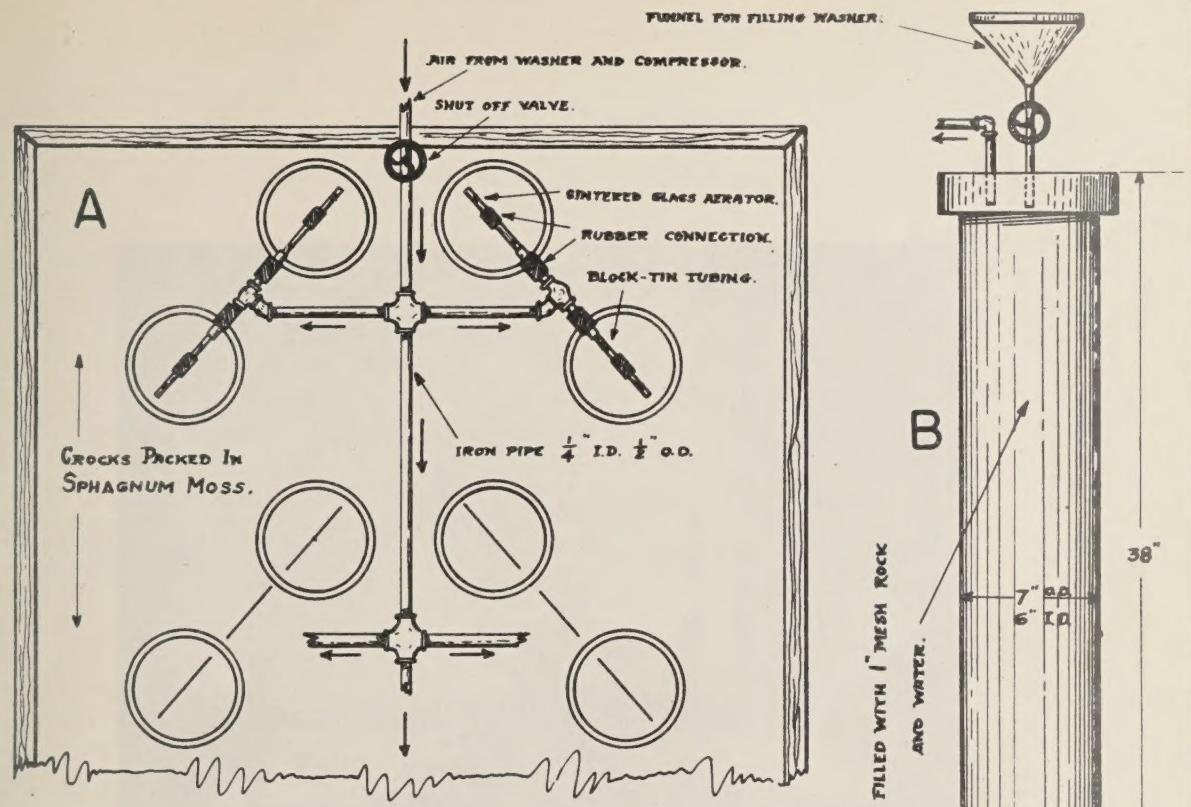
In toxicity experiments on a laboratory scale, where it is desirable to use living plants as food, the uniform application of dust to the individual plants is a matter of prime importance. An apparatus is needed (1) that will discharge all of the dust that is weighed out, (2) that will discharge the dust in such a manner as to allow it to fall evenly on the plant, (3) that can be easily cleaned, and (4) that may be operated with reasonable speed and facility.

In connection with toxicity studies of certain materials to larvae of the tobacco hornworm (Protoparce sexta Joh.) at the Oxford, N. C., station in 1936, the writer developed a dusting device which has satisfactorily met the requirements outlined above. It should be noted, however, that this method of dusting is satisfactory only for insects that chew all the way through the leaf, since very little dust is applied to the under side.

The dusting device operates on the principle of a simple aspirator, except that air instead of water causes the suction. It consists of a piece of 3/16-inch copper tubing about 9 inches long, in the side of which a blowpipe has been inserted and soldered (fig. 1). Air under pressure of 10 to 15 pounds enters through the blowpipe, C, and discharges through the nozzle end, B, thus causing a suction at A. The dust is weighed out on a watch glass or in a small evaporating dish and held at A, where it is sucked up and blown into the dusting chamber. The dusting chamber (fig. 2) consists of a large inverted battery jar. Encircling the potted plant within the dusting chamber is a  $\frac{1}{4}$ -inch copper tube, in the upper side of which there are nine small holes, more or less regularly spaced. A gentle flow of air passes through these holes during the application of dust, which serves to agitate the air within the chamber and thus aids in obtaining an even dispersal of the dust. When all of the dust has been blown into the chamber the air pressure is cut off and the dust allowed to settle for a definite length of time.

If the dust is thoroughly screened and mixed and is kept reasonably dry, very little of it sticks in the tube. The latter is easily cleaned with ordinary pipe cleaners.





- A** SCHEME FOR ARRANGING CROCKS ON THE GREENHOUSE TABLE. (PLAN)
- B** TANK FOR WASHING AIR FROM COMPRESSOR. (ELEVATION)
- B<sub>1</sub>** TRAP FOR POSSIBLE BACK FLOW OF WATER FROM B. (ELEVATION)
- C** GALLON CROCK SHOWING METHOD OF SUPPORTING THE PLANT AND DETAILS OF AERATION OUTLETS. (VERTICAL CROSS SECTION)

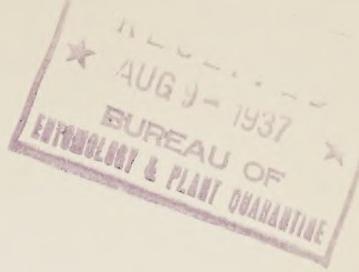
Figure 1. Diagram showing arrangement of crocks, and air-washing equipment, for culture of *Ribes* in nutrient solution.





Figure 2.--Complete dusting apparatus. Large battery jar inverted; small potted plant in place; perforated tube encircling pot; duster.





ET-105

AN APPARATUS FOR DUSTING INDIVIDUAL PLANTS

Correction

The figures in the original circular were incorrectly assembled. The attached sheet contains the correct figure 1 (Diagram of Dusting Device) for ET-105.



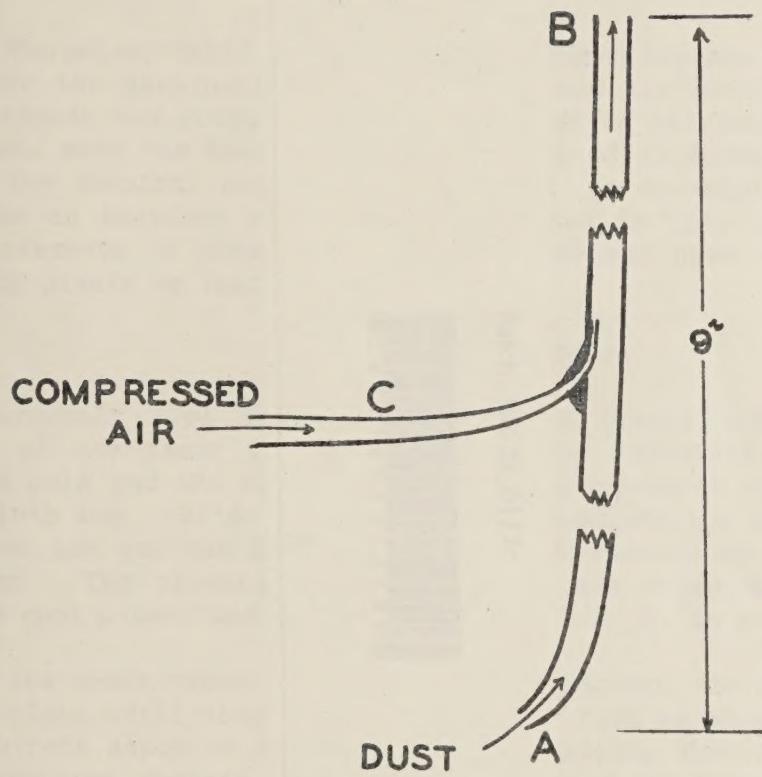


Figure 1.—Diagram of dusting device. A, dust intake; B, nozzle; C, blowpipe, connected with compressed-air line.

